

Wine & Windowing

An Impedance Mismatch

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SOFTWARE LIBERATORS

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Disclaimer

Expect:

- cursed stuff
- very cursed stuff
- extremely cursed stuff

The Layering

Win32

38 years of
backwards
compatible cruft

X11

39 years of
backwards
compatible cruft

winex11.drv

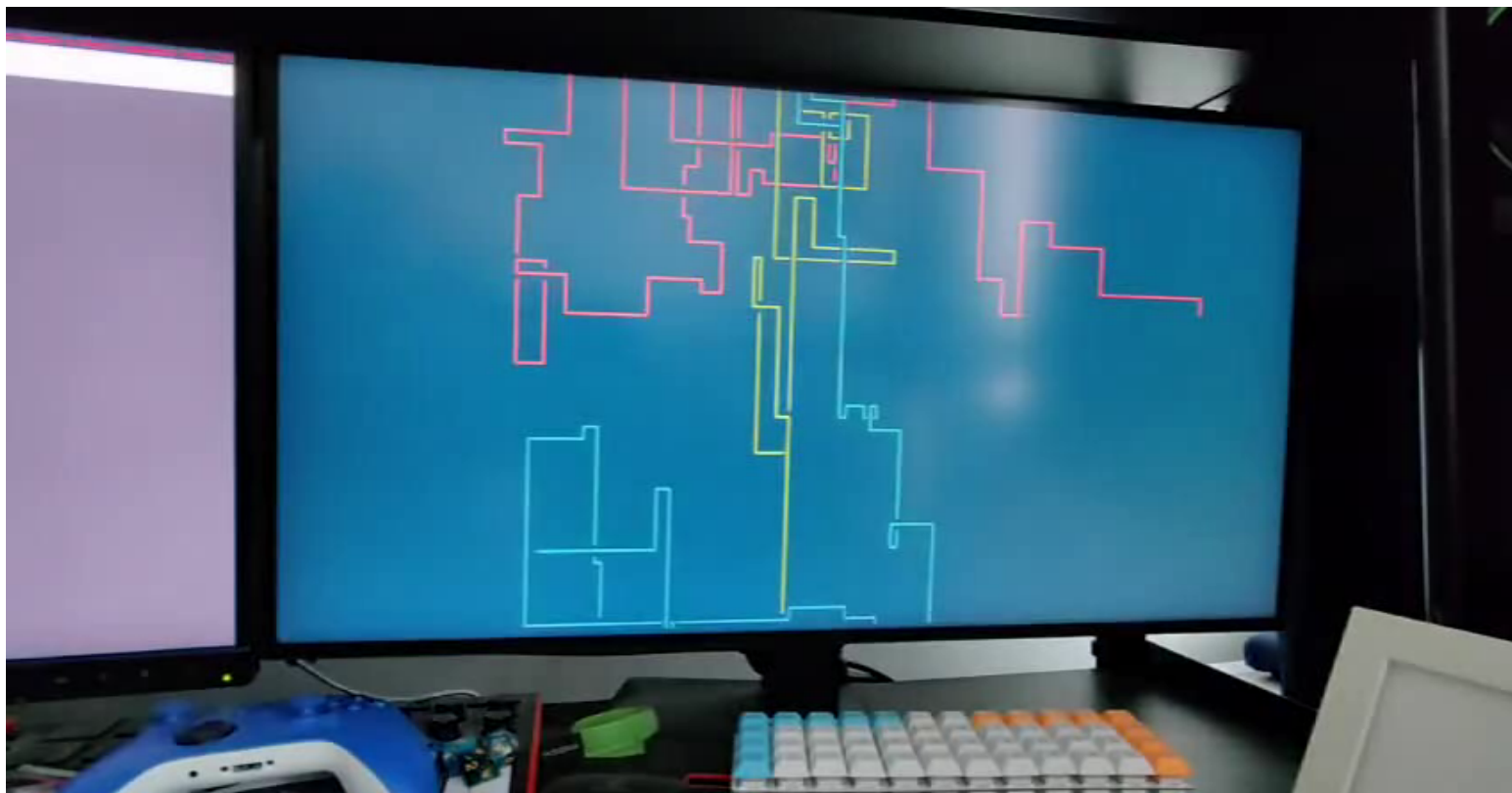
winex11.drv



Let's Talk About Nasty Behavior

Let's Talk About Modesetting

(that's a video showing modeset in non-PDF version)



Fullscreen Hack

- never modeset
- image scaling
- letter- / pillar- boxing
- vulkan shader for scaling

dlls/winex11.drv/Makefile.in		1	+
dlls/winex11.drv/desktop.c		6	+ -
dlls/winex11.drv/display.c		42	+ -
dlls/winex11.drv/event.c		18	+ -
dlls/winex11.drv/fs.c		971	+++++
dlls/winex11.drv/graphics.c		3	+ -
dlls/winex11.drv/init.c		6	+ -
dlls/winex11.drv/mouse.c		46	+ -
dlls/winex11.drv/opengl.c		1272	+++++ -
dlls/winex11.drv/vulkan.c		135	+++++
dlls/winex11.drv/window.c		242	+++++ -
dlls/winex11.drv/x11drv.h		48	++
dlls/winex11.drv/x11drv_main.c		11	+ -
dlls/winex11.drv/xrender.c		136	++++ -
dlls/winex11.drv/xvidmode.c		22	+ -

15 files changed, 2882 insertions(+), 77 deletions(-)

dlls/winevulkan/loader.c		54	+ -
dlls/winevulkan/make_vulkan		16	+ -
dlls/winevulkan/vulkan.c		1007	+++++
dlls/winevulkan/vulkan_loader.h		24	+
dlls/winevulkan/vulkan_private.h		43	++

5 files changed, **1126 insertions(+)**, 18 deletions(-)

- not (that) necessary with XWayland
- X11 is still everywhere
- downstream, specific to Proton

Let's Talk About Inconsistency

Let's Talk About XWayland

```
Pixmap pixmap = XCreatePixmap(display, window, 20, 20, 24);
```

```
GLXContext gl_context = glXCreateContext(display, visual_info,  
                                          NULL, GL_TRUE);
```

```
glXMakeCurrent(display, window, gl_context);
```

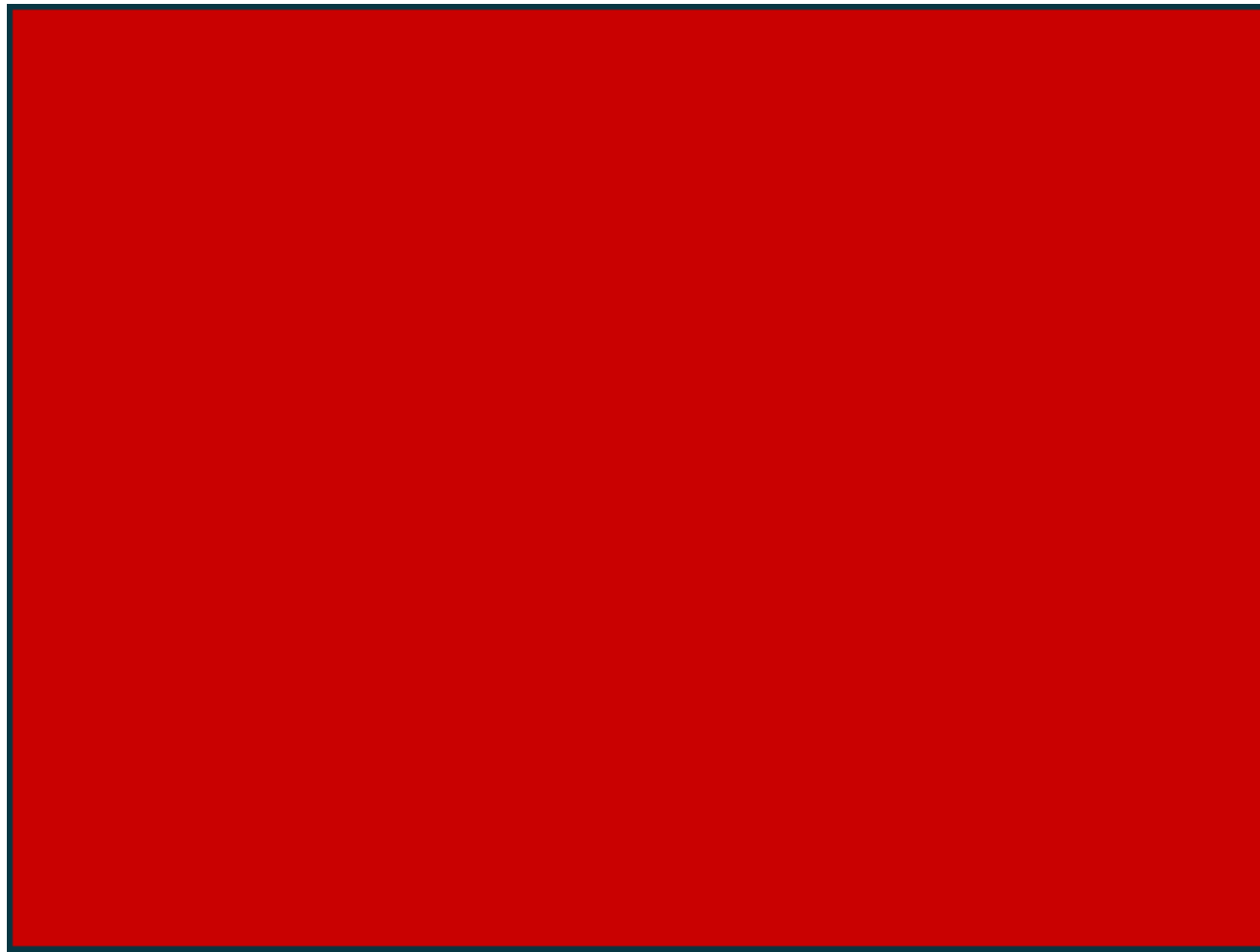
```
GC gc = XCreateGC(display, window, 0, NULL);
```



```
glColor3b(100, 0, 0); /* red */
```

```
glBegin(GL_QUADS);  
glVertex2f(-1.0f, 1.0f);  
glVertex2f(1.0f, 1.0f);  
glVertex2f(1.0f, -1.0f);  
glVertex2f(-1.0f, -1.0f);  
glEnd();
```

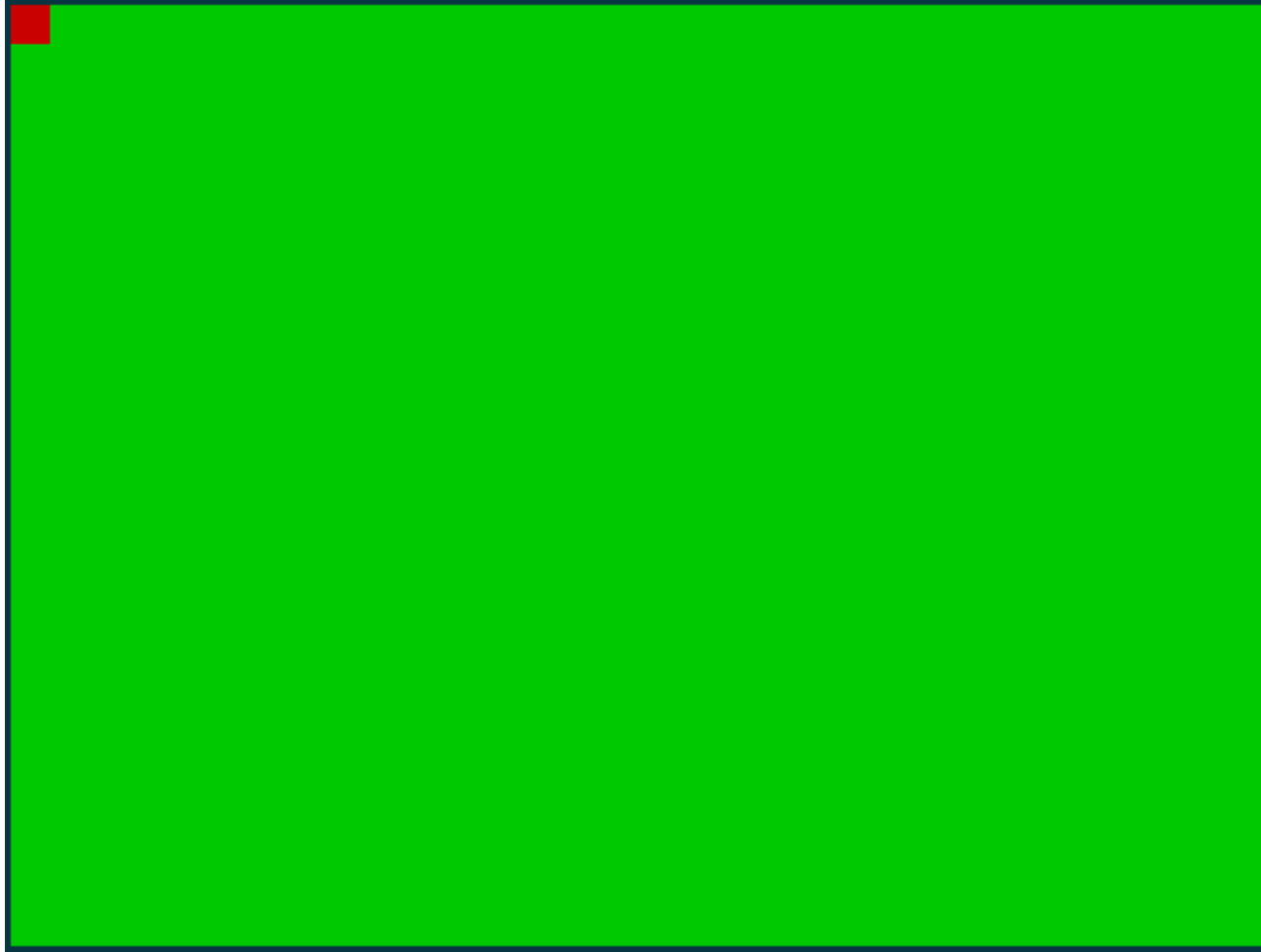
```
glXSwapBuffers(display, window);
```



```
XCopyArea(display, window, pixmap, gc, 0, 0, 20, 20, 0, 0);  
XCopyArea(display, pixmap, window, gc, 0, 0, 20, 20, 0, 0);
```

?


```
XCopArea(display, window, pixmap, gc, 0, 0, 20, 20, 0, 0);  
XCopArea(display, pixmap, window, gc, 0, 0, 20, 20, 0, 0);
```





Cyberpunk 2077 designed and developed by CD PROJEKT RED,
with account system powered by GOG GALAXY, developed by
GOG.COM.



Sign up with GOG

hello_xdc



wayland_lover@x.org



Password

? Password validation requirements

- ☐ I am over 16 years old and I've read and accepted the [GOG User Agreement](#) (Required). Learn more about GOG personal data [i](#)
- ☐ I would like to receive news, special offers and other information from CD PROJEKT RED to my email address. I am over 16 years old and I've read and accepted the [CD PROJEKT Privacy Policy](#). Learn more about CD PROJEKT RED personal data [i](#)



I'm not a robot



reCAPTCHA
Privacy - Terms

Sign up now

— OR —

Continue with Facebook

Log in with Facebook is currently unavailable. If you logged in to GOG

Horrible Horrible Flicker

QtWebEngine
OpenGL rendering

BitBlt() 2x2 square every 1s
translated to XCopyArea()

workaround
LIBGL_ALWAYS_SOFTWARE=1

reported against gamescope

Let's Talk About Fragmentation

Let's Talk About WMs

<https://www.freedesktop.org/wiki/Specifications/wm-spec/>

Window Manager Specification Project

The Window Manager Specification is meant to unify the GNOME and KDE window manager hint conventions. Most of the design work takes place on wm-spec-list@gnome.org; you can subscribe to this list at <http://mail.gnome.org/mailman/listinfo/wm-spec-list>. To post without subscribing, subscribe to the no-traffic post-only@gnome.org list.

Mailinglist

You can find archives of the WM spec list [here](#).

Repository

wm-spec is included with other [freedesktop.org Specifications](#) in the xdg-specs [git](#) repo.

- wm-spec history:
 - <http://cgit.freedesktop.org/xdg/xdg-specs/log/wm-spec/>
- Browse xdg-specs repo:
 - <http://cgit.freedesktop.org/xdg/xdg-specs/>
- Clone:
 - `git://anongit.freedesktop.org/xdg/xdg-specs`
 - `ssh://git.freedesktop.org/git/xdg/xdg-specs`
 - `http://anongit.freedesktop.org/git/xdg/xdg-specs.git`

Spec

- Version 1.3 - [html \(one page\)](#) - [html \(multiple pages\)](#) - [xml](#)
- Version 1.4.draft-2 - [html \(one page\)](#) - [html \(multiple pages\)](#) - [xml](#)

2022-October Archive by Thread

- Messages sorted by: [Thread] [[Date](#)] [[Author](#)]
- [Other months](#)

Messages are ordered newest-to-oldest in this index. The newest threads will be at the top of this page, the oldest will be at the bottom.

Within a single thread, the first mail note is the START of the thread; the notes following that are in the chronological order of when they were received. So globally, newest messages are at the top, but within a thread, the oldest (the start of the thread) is at the top.

If you think about it, it is confusing. Just go with the flow and everything will be all right.

- [Announcement: this mailing list will be retired by the end of Oct 2022](#), *Andrea Veri*
-

wm-spec



date -> pubdate, so it appears in the HTML-generated
pages ...

David Faure authored 9 years ago

e9be1b76



master ▾

History

Find file

Edit ▾





xdg-specs / wm-spec /



Copy SSH clone URL



Name	Last commit	Last update
..		
 Makefile	Add a Makefile for wm-spec	11 years ago
 wm-spe...	date -> pubdate, so it appears in the HTM...	9 years ago



- **wm-spec**
 - **version 1.5 (one page, split pages)**
 - version 1.4
 - version 1.3
 - version 1.2
 - version 1.1
- **xembed-spec**
 - **version 0.5 (one page, split pages)**
- **xsettings-spec**

wm-spec: update / redirect FDO wiki

Edit

Close issue



📄 Open 🗨️ Issue created 55 minutes ago by Arkadiusz Hiler

<https://www.freedesktop.org/wiki/Specifications/wm-spec/> is the first result that comes up when using DuckDuckGo, Mojeek and Google. It's outdated and misleading in many ways:

1. creates illusion that a draft of 1.4 is the latest version
2. mentions a defunct way of contributing (<https://mail.gnome.org/archives/wm-spec-list/2022-October/msg00000.html>)
3. link to the cgit repos instead of here
4. most links in supporter sections go to pages that are no longer there
5. claims to be `Last edited Fri May 7 01:22:37 2021` which would suggest that it's still fairly up to date

It's not clear if wm-spec is considered a done deal or if there's still a way of contributing / raising issues about unclear spec.

Let's Talk About Mutter







_NET_WM_FULLSCREEN_MONITORS

- This hint might [...] be used by a movie or presentation application allowing users to **display the media spanned over several monitors**.
- A read-only list of 4 monitor indices indicating the top, bottom, left, and right edges of the window when the fullscreen state is enabled. The indices are from the set returned by the Xinerama extension.

_NET_WM_FULLSCREEN_MONITORS

- **it can't be unset**
- imposes constraints, e.g. window can't be moved to another monitor by using the Shift+Super+Arrows

Let's Talk About KWin


```
static HWND sync_window_position( struct x11drv_win_data *data,
                                  UINT swp_flags,
                                  const RECT *old_window_rect,
                                  const RECT *old_whole_rect,
                                  const RECT *old_client_rect )
{
    /* ... */
    /* KWin doesn't allow moving a window with
     * _NET_WM_STATE_FULLSCREEN set. So we need
     * to remove _NET_WM_STATE_FULLSCREEN before
     * moving the window and restore it later */
    if (wm_is_kde( data→display )
        && NtUserIsWindowRectFullScreen( &data→whole_rect ))
        /* ... */
}
```

Let's Talk About Mutter

Let's Talk About Nasty Games

Let's Talk About Focus Stealing Prevention

A Game

- started **unfocused** on some WMs
- with **taskbar visible** and the game being behind it
- after manual focusing (mouse click) **controller handling** was borken

```
HWND hWnd = CreateWindowExW(WS_EX_APPWINDOW | WS_EX_WINDOWEDGE,  
                             L"Nomad", L"Dunia", WS_POPUP,  
                             0,0, 1,1, NULL, NULL, hInstance, NULL);
```

```
ShowCursor(TRUE);  
ShowWindow(hWnd, SW_NORMAL);  
ShowWindow(hWnd, SW_MINIMIZE);
```

```
Sleep(2000); /* game init */  
ShowWindow(hWnd, SW_RESTORE);
```

```
Sleep(2000); /* more stuff happening */  
SetWindowPos(hWnd, NULL, 0, 0, 1920, 1080,  
              SWP_NOOWNERZORDER | SWP_DRAWFRAME | SWP_NOZORDER);
```

```
Sleep(2000); /* even more things */  
SetForegroundWindow(hWnd);
```

“This cosmic dance of bursting decadence and withheld permissions twists all our arms collectively, but if sweetness can win, and it can, then I'll still be here tomorrow to high-five you yesterday, my friend. Peace.”

- Royal Tart Toter, Adventure Time

Yeah, nah...

**If I was WM I would also find this
suspicious...**

**Partial fix to make sure the focus
state is represented correctly on
Win32 side and move on...**

Let's talk about Gamescope

Gamescope

- **Designed for games.**
- **XWayland.**
- We expose `GWL_STYLE` and `GWL_EXSTYLE` as window properties and gamescope understands those.
- Used to make **better, informed decisions which window to focus** / put in the foreground.
- Used for handling transparent / layered Windows.

Summary

- Any change to winex11.drv can cause a **butterfly effect**.
- We use X11 in ways that are **undefined**.
- **Impossible to get things exactly right** without more extensions / WMs involvement.

Thanks!



Questions?